Connecting via Winsock to STN

Welcome to STN International! Enter x:x

LOGINID:SSSPTA1800EXS

PASSWORD:
TERMINAL (ENTER 1, 2, 3, OR ?):2

* * * * * * * * * * Welcome to STN International * * * * * * * * * *

NEWS	1		Web Page URLs for STN Seminar Schedule - N. America
NEWS	2		"Ask CAS" for self-help around the clock
NEWS	3	May 12	EXTEND option available in structure searching
NEWS	4	May 12	Polymer links for the POLYLINK command completed in REGISTRY
NEWS	5	May 27	New UPM (Update Code Maximum) field for more efficient patent SDIs in CAplus
NEWS	6	May 27	CAplus super roles and document types searchable in REGISTRY
NEWS	7	Jun 22	STN Patent Forums to be held July 19-22, 2004
NEWS	8	Jun 28	Additional enzyme-catalyzed reactions added to CASREACT
NEWS	9	Jun 28	ANTE, AQUALINE, BIOENG, CIVILENG, ENVIROENG, MECHENG, and WATER from CSA now available on STN(R)
NEWS	10	Jul 12	BEILSTEIN enhanced with new display and select options, resulting in a closer connection to BABS

NEWS EXPRESS	MARCH 31 CURRENT WINDOWS VERSION IS V7.00A, CURRENT MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP), AND CURRENT DISCOVER FILE IS DATED 26 APRIL 2004
NEWS HOURS	STN Operating Hours Plus Help Desk Availability
NEWS INTER	General Internet Information
NEWS LOGIN	Welcome Banner and News Items
NEWS PHONE	Direct Dial and Telecommunication Network Access to STN
NEWS WWW	CAS World Wide Web Site (general information)

Enter NEWS followed by the item number or name to see news on that specific topic.

All use of STN is subject to the provisions of the STN Customer agreement. Please note that this agreement limits use to scientific research. Use for software development or design or implementation of commercial gateways or other similar uses is prohibited and may result in loss of user privileges and other penalties.

* * * * * * * * * * * * * STN Columbus * * * * * * * * * * * * * * * *

FILE 'HOME' ENTERED AT 18:56:20 ON 20 JUL 2004

=> fil .eliz

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	0.21	0.21

FILE 'MEDLINE' ENTERED AT 18:56:36 ON 20 JUL 2004

FILE 'SCISEARCH' ENTERED AT 18:56:36 ON 20 JUL 2004
COPYRIGHT 2004 THOMSON ISI

FILE 'LIFESCI' ENTERED AT 18:56:36 ON 20 JUL 2004
COPYRIGHT (C) 2004 Cambridge Scientific Abstracts (CSA)

```
FILE 'BIOTECHDS' ENTERED AT 18:56:36 ON 20 JUL 2004
COPYRIGHT (C) 2004 THOMSON DERWENT AND INSTITUTE FOR SCIENTIFIC INFORMATION

FILE 'BIOSIS' ENTERED AT 18:56:36 ON 20 JUL 2004
COPYRIGHT (C) 2004 BIOLOGICAL ABSTRACTS INC.(R)

FILE 'EMBASE' ENTERED AT 18:56:36 ON 20 JUL 2004
COPYRIGHT (C) 2004 Elsevier Inc. All rights reserved.

FILE 'HCAPLUS' ENTERED AT 18:56:36 ON 20 JUL 2004
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2004 AMERICAN CHEMICAL SOCIETY (ACS)

FILE 'NTIS' ENTERED AT 18:56:36 ON 20 JUL 2004
Compiled and distributed by the NTIS, U.S. Department of Commerce.
It contains copyrighted material.
All rights reserved. (2004)

FILE 'ESBIOBASE' ENTERED AT 18:56:36 ON 20 JUL 2004
COPYRIGHT (C) 2004 Elsevier Science B.V., Amsterdam. All rights reserved.

FILE 'BIOTECHNO' ENTERED AT 18:56:36 ON 20 JUL 2004
COPYRIGHT (C) 2004 Elsevier Science B.V., Amsterdam. All rights reserved.

FILE 'WPIDS' ENTERED AT 18:56:36 ON 20 JUL 2004
COPYRIGHT (C) 2004 THOMSON DERWENT

=> s luciferase (10a) (firefly or luciola)
L1       11631 LUCIFERASE (10A) (FIREFLY OR LUCIOLA)

=> s l1 (5a)(muta? or variant)
  10 FILES SEARCHED...
L2         356 L1 (5A)(MUTA? OR VARIANT)

=> dup rem l2
PROCESSING COMPLETED FOR L2
L3          128 DUP REM L2 (228 DUPLICATES REMOVED)

=> s l2 and 490
L4            1 L2 AND 490

=> d

L4   ANSWER 1 OF 1  HCAPLUS  COPYRIGHT 2004 ACS on STN
AN   1999:464101  HCAPLUS
DN   131:84835
TI   Luciferase mutants resistant to surfactants and use for determination of
     intracellular ATP
IN   Hattori, Noriaki; Murakami, Seiji
PA   Kikkoman Corporation, Japan
SO   PCT Int. Appl., 56 pp.
     CODEN: PIXXD2
DT   Patent
LA   Japanese
FAN.CNT 1
     PATENT NO.        KIND  DATE          APPLICATION NO.  DATE
     ---------------   ----  --------      ---------------  --------
PI   WO 9933997         A1   19990708      WO 1998-JP5864   19981224
         W:  AU, CA, US
         RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,
             PT, SE
     JP 11239493         A2   19990907      JP 1998-363108   19981221
```

```
     AU 9916883        A1   19990719       AU 1999-16883    19981224
     EP 1041151        A1   20001004       EP 1998-961523   19981224
        R:  DE, GB, NL
PRAI JP 1997-361022    A    19971226
     WO 1998-JP5864    W    19981224
RE.CNT  13    THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
              ALL CITATIONS AVAILABLE IN THE RE FORMAT


=> s l2 and atp
L5          94 L2 AND ATP

=> s l5 not l4
L6          93 L5 NOT L4

=> dup rem l6
PROCESSING COMPLETED FOR L6
L7           38 DUP REM L6 (55 DUPLICATES REMOVED)

=> d 1-10

L7   ANSWER 1 OF 38     MEDLINE on STN                    DUPLICATE 1
AN   2004088756     MEDLINE
DN   PubMed ID: 14670952
TI   Relationship between growth rate and ATP concentration in
     Escherichia coli: a bioassay for available cellular ATP.
AU   Schneider David A; Gourse Richard L
CS   Department of Bacteriology, University of Wisconsin, Madison, Wisconsin
     53706, USA.
NC   R01 GM37048 (NIGMS)
SO   Journal of biological chemistry, (2004 Feb 27) 279 (9) 8262-8.
     Journal code: 2985121R. ISSN: 0021-9258.
CY   United States
DT   Journal; Article; (JOURNAL ARTICLE)
LA   English
FS   Priority Journals
EM   200405
ED   Entered STN: 20040224
     Last Updated on STN: 20040505
     Entered Medline: 20040503

L7   ANSWER 2 OF 38  LIFESCI    COPYRIGHT 2004 CSA on STN DUPLICATE 2
AN   2003:64587  LIFESCI
TI   Creation of a Thermostable Firefly Luciferase with pH-insensitive
     Luminescent Color
AU   Kitayama, A.; Yoshizaki, H.; Ohmiya, Y.; Ueda, H.; Nagamune, T.
CS   Department of Chemistry and Biotechnology, School of Engineering,
     University of Tokyo, Tokyo, Japan; E-mail: h-ueda@k.u-tokyo.ac.jp
SO   Photochemistry and Photobiology [Photochem. Photobiol.], (20030300) vol.
     77, no. 3, pp. 333-338.
     ISSN: 0031-8655.
DT   Journal
FS   G
LA   English
SL   English

L7   ANSWER 3 OF 38  BIOSIS  COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
     DUPLICATE 3
AN   2003:464149  BIOSIS
DN   PREV200300464149
TI   Enhanced microbial biomass assay using mutant luciferase resistant to
     benzalkonium chloride.
AU   Hattori, Noriaki [Reprint Author]; Sakakibara, Tatsuya; Kajiyama, Naoki;
     Igarashi, Toshinori; Maeda, Masako; Murakami, Seiji
```

CS Research and Development Division, Kikkoman Corp., 399 Noda, Noda City, Chiba Pref., 278-0037, Japan
8345@mail.kikkoman.co.jp
SO Analytical Biochemistry, (August 15 2003) Vol. 319, No. 2, pp. 287-295. print.
ISSN: 0003-2697 (ISSN print).
DT Article
LA English
ED Entered STN: 8 Oct 2003
Last Updated on STN: 8 Oct 2003

L7 ANSWER 4 OF 38 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AN 2003:531136 BIOSIS
DN PREV200300533721
TI Measurement of free **ATP** concentration in vivo and the role of initiating NTP concentration in transcription initiation.
AU Schneider, D. A. [Reprint Author]; Gourse, R. L. [Reprint Author]
CS University of Wisconsin-Madison, Madison, WI, USA
SO Abstracts of the General Meeting of the American Society for Microbiology, (2003) Vol. 103, pp. H-072. http://www.asmusa.org/mtgsrc/generalmeeting.htm. cd-rom.
Meeting Info.: 103rd American Society for Microbiology General Meeting. Washington, DC, USA. May 18-22, 2003. American Society for Microbiology.
ISSN: 1060-2011 (ISSN print).
DT Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LA English
ED Entered STN: 12 Nov 2003
Last Updated on STN: 12 Nov 2003

L7 ANSWER 5 OF 38 MEDLINE on STN DUPLICATE 4
AN 2002424703 MEDLINE
DN PubMed ID: 12181344
TI Overexpression of yeast Hsp110 homolog Sse1p suppresses ydj1-151 thermosensitivity and restores Hsp90-dependent activity.
AU Goeckeler Jennifer L; Stephens Andi; Lee Paul; Caplan Avrom J; Brodsky Jeffrey L
CS Department of Biological Sciences, University of Pittsburgh, Pennsylvania 15260, USA.
SO Molecular biology of the cell, (2002 Aug) 13 (8) 2760-70.
Journal code: 9201390. ISSN: 1059-1524.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200304
ED Entered STN: 20020816
Last Updated on STN: 20030410
Entered Medline: 20030409

L7 ANSWER 6 OF 38 MEDLINE on STN DUPLICATE 5
AN 2003085153 MEDLINE
DN PubMed ID: 12596852
TI **Mutant luciferase** enzymes from **fireflies** with increased resistance to benzalkonium chloride.
AU Hattori Noriaki; Kajiyama Naoki; Maeda Masako; Murakami Seiji
CS Research and Development Division, Kikkoman Corporation, 399 Noda, Noda city, Chiba pref. 278-0037, Japan.. 8345@mail.kikkoman.co.jp
SO Bioscience, biotechnology, and biochemistry, (2002 Dec) 66 (12) 2587-93.
Journal code: 9205717. ISSN: 0916-8451.
CY Japan
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals

EM 200308
ED Entered STN: 20030225
Last Updated on STN: 20030813
Entered Medline: 20030812

L7 ANSWER 7 OF 38 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:108853 HCAPLUS
DN 139:319073
TI Novel in vivo reporters based on firefly luciferase
AU White, P. J.; Leslie, R. L.; Lingard, B.; Williams, J. R.; Squirrell, D. J.
CS Dstl, Chemical and Biological Sciences, Salisbury, Wiltshire, SP4 0JQ, UK
SO Bioluminescence & Chemiluminescence: Progress & Current Applications, [Proceedings of the Symposium on Bioluminescence and Chemiluminescence], 12th, Cambridge, United Kingdom, Apr. 5-9, 2002 (2002), 509-512. Editor(s): Stanley, Philip E.; Kricka, Larry J. Publisher: World Scientific Publishing Co. Pte. Ltd., Singapore, Singapore.
CODEN: 69DPGZ; ISBN: 981-238-156-2
DT Conference
LA English
RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 8 OF 38 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:210584 HCAPLUS
DN 139:129845
TI Catalytic properties and bioluminescence spectra of recombinant **luciferase** of fire-fly **Luciola** mingrelica with point **mutations** outside of active site
AU Maloshenok, L. G.; Uporov, I. V.; Ugarova, N. N.
CS Kafedra Khim. Enzimol., Khim. Fak., Mosk. Gos. Univ. im. M. V. Lomonosova, Moscow, Russia
SO Vestnik Moskovskogo Universiteta, Seriya 2: Khimiya (2002), 43(6), 359-362
CODEN: VMUKA5; ISSN: 0579-9384
PB Izdatel'stvo Moskovskogo Universiteta
DT Journal
LA Russian

L7 ANSWER 9 OF 38 MEDLINE on STN DUPLICATE 6
AN 2002303453 MEDLINE
DN PubMed ID: 12044905
TI Improved practical usefulness of **firefly luciferase** by gene chimerization and random **mutagenesis.**
AU Hirokawa Kozo; Kajiyama Naoki; Murakami Seiji
CS Research and Development Division, Kikkoman Corporation, 399 Noda, Chiba Prefecture 278-0037, Japan.. khirokawa@mail.kikkoman.co.jp
SO Biochimica et biophysica acta, (2002 Jun 3) 1597 (2) 271-9.
Journal code: 0217513. ISSN: 0006-3002.
CY Netherlands
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200207
ED Entered STN: 20020605
Last Updated on STN: 20020725
Entered Medline: 20020724

L7 ANSWER 10 OF 38 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
AN 2002:520740 SCISEARCH
GA The Genuine Article (R) Number: 563PD
TI Improved practical usefulness of **firefly luciferase** by gene chimerization and random **mutagenesis**
AU Hirokawa K (Reprint); Kajiyama N; Murakami S
CS Kikkoman Foods Inc, Div Res & Dev, 399 Noda, Noda, Chiba 2780037, Japan

(Reprint); Kikkoman Foods Inc, Div Res & Dev, Noda, Chiba 2780037, Japan
CYA Japan
SO BIOCHIMICA ET BIOPHYSICA ACTA-PROTEIN STRUCTURE AND MOLECULAR ENZYMOLOGY, (3 JUN 2002) Vol. 1597, No. 2, pp. 271-279.
Publisher: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS.
ISSN: 0167-4838.
DT Article; Journal
LA English
REC Reference Count: 26
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

=> d 11-20

L7 ANSWER 11 OF 38 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:108767 HCAPLUS
DN 139:334753
TI Catalytic properties and bioluminescence spectra of recombinant **firefly luciferase Luciola** mingrelica with point **mutations** out of the enzyme active site
AU Maloshenok, L. G.; Ugarova, N. N.
CS Dept of Chemistry, Lomonosov Moscow State University, Moscow, 119899, Russia
SO Bioluminescence & Chemiluminescence: Progress & Current Applications, [Proceedings of the Symposium on Bioluminescence and Chemiluminescence], 12th, Cambridge, United Kingdom, Apr. 5-9, 2002 (2002), 45-48. Editor(s): Stanley, Philip E.; Kricka, Larry J. Publisher: World Scientific Publishing Co. Pte. Ltd., Singapore, Singapore.
CODEN: 69DPGZ; ISBN: 981-238-156-2
DT Conference
LA English
RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 12 OF 38 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:108764 HCAPLUS
DN 139:334659
TI Structural study of Photinus pyralis firefly luciferase using fluorescence
AU Gandelman, O. A.; Tisi, L. C.; Lowe, C. R.; Murray, J. A. H.
CS Institute of Biotechnology, University of Cambridge, Cambridge, CB2 1QT, UK
SO Bioluminescence & Chemiluminescence: Progress & Current Applications, [Proceedings of the Symposium on Bioluminescence and Chemiluminescence], 12th, Cambridge, United Kingdom, Apr. 5-9, 2002 (2002), 33-36. Editor(s): Stanley, Philip E.; Kricka, Larry J. Publisher: World Scientific Publishing Co. Pte. Ltd., Singapore, Singapore.
CODEN: 69DPGZ; ISBN: 981-238-156-2
DT Conference
LA English
RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 13 OF 38 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AN 2001:440118 BIOSIS
DN PREV200100440118
TI Enzyme assay for **mutant firefly luciferase.**
AU Squirrell, David James [Inventor, Reprint author]; White, Peter John [Inventor]; Lowe, Christopher Robin [Inventor]; Murray, James Augustus Henry [Inventor]
CS Salisbury, UK
ASSIGNEE: The United States of America as represented by the Secretary of the State of Defence, Washington, DC, USA
PI US 6265177 July 24, 2001

SO Official Gazette of the United States Patent and Trademark Office Patents, (July 24, 2001) Vol. 1248, No. 4. e-file.
CODEN: OGUPE7. ISSN: 0098-1133.
DT Patent
LA English
ED Entered STN: 19 Sep 2001
Last Updated on STN: 22 Feb 2002

L7 ANSWER 14 OF 38 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2001:66974 HCAPLUS
DN 134:218896
TI The role of active site residue arginine 218 in firefly luciferase bioluminescence
AU Branchini, Bruce R.; Magyar, Rachelle A.; Murtiashaw, Martha H.; Portier, Nathan C.
CS Department of Chemistry, Connecticut College, New London, CT, 06320, USA
SO Biochemistry (2001), 40(8), 2410-2418
CODEN: BICHAW; ISSN: 0006-2960
PB American Chemical Society
DT Journal
LA English
RE.CNT 54 THERE ARE 54 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 15 OF 38 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
AN 2002:302797 SCISEARCH
GA The Genuine Article (R) Number: 535RA
TI Relationship between the structure of the protein globule and bioluminescence spectra of firefly luciferase
AU Ugarova N N (Reprint); Brovko L Y
CS Moscow MV Lomonosov State Univ, Dept Chem, Moscow 119899, Russia (Reprint); Univ Guelph, Dept Food Sci, Guelph, ON N1G 2W1, Canada
CYA Russia; Canada
SO RUSSIAN CHEMICAL BULLETIN, (OCT 2001) Vol. 50, No. 10, pp. 1752-1761.
Publisher: CONSULTANTS BUREAU, 233 SPRING ST, NEW YORK, NY 10013 USA.
ISSN: 1066-5285.
DT General Review; Journal
LA English
REC Reference Count: 42
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

L7 ANSWER 16 OF 38 LIFESCI COPYRIGHT 2004 CSA on STN
AN 2002:27771 LIFESCI
TI Enzyme assay for **mutant firefly luciferase**
AU Squirrell, D.J.; White, P.J.; Lowe, C.R.; Murray, J.A.H.
CS The United States of America as represented by the Secretary of the State
SO (20010724) . US Patent: 6265177; US CLASS: 435/8; 435/189; 435/252.3; 435/320.1; 435/440; 435/810; 536/23.2.
DT Patent
FS W2
LA English
SL English

L7 ANSWER 17 OF 38 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:236330 HCAPLUS
DN 132:290463
TI The role of lysine 529, a conserved residue of the acyl-adenylate-forming enzyme superfamily, in firefly luciferase
AU Branchini, Bruce R.; Murtiashaw, Martha H.; Magyar, Rachelle A.; Anderson, Shannon M.
CS Department of Chemistry, Connecticut College, New London, CT, 06320, USA
SO Biochemistry (2000), 39(18), 5433-5440
CODEN: BICHAW; ISSN: 0006-2960
PB American Chemical Society

DT Journal
LA English
RE.CNT 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 18 OF 38 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:807421 HCAPLUS
DN 134:127593
TI Knock-out firefly luciferases and their potential technological applications
AU Ispas, G.; Famelaer, I.; Decanniere, K.; D'Haeseleer, M.; Jacobs, M.
CS Laboratory of Plant Genetics, Vrije Universiteit Brussel, Sint Genesius Rode, B-1640, Belg.
SO Mededelingen - Faculteit Landbouwkundige en Toegepaste Biologische Wetenschappen (Universiteit Gent) (2000), 65(3b), 615-618
CODEN: MFLBER; ISSN: 1373-7503
PB Universiteit Gent, Faculteit Landbouwkundige en Toegepaste Biologische Wetenschappen
DT Journal; General Review
LA English
RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 19 OF 38 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
AN 1999-07862 BIOTECHDS
TI New mutant luciferase enzymes with increased stability; from Photuris pennsylvania, used for **ATP** assay, luminescent marker and genetic reporter, etc.
AU Wood K V; Hall M P
PA Promega
LO Madison, WI, USA.
PI WO 9914336 25 Mar 1999
AI WO 1998-US19494 18 Sep 1998
PRAI US 1997-59379 19 Sep 1997
DT Patent
LA English
OS WPI: 1999-229538 [19]

L7 ANSWER 20 OF 38 MEDLINE on STN DUPLICATE 7
AN 2000076476 MEDLINE
DN PubMed ID: 10608870
TI Functional defects of the DnaK756 mutant chaperone of Escherichia coli indicate distinct roles for amino- and carboxyl-terminal residues in substrate and co-chaperone interaction and interdomain communication.
AU Buchberger A; Gassler C S; Buttner M; McMacken R; Bukau B
CS Institut fur Biochemie und Molekularbiologie, Universitat Freiburg, Hermann Herder Strasse 7, D-79104 Freiburg, Germany.
NC GM36526 (NIGMS)
SO Journal of biological chemistry, (1999 Dec 31) 274 (53) 38017-26.
Journal code: 2985121R. ISSN: 0021-9258.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200002
ED Entered STN: 20000218
Last Updated on STN: 20000218
Entered Medline: 20000208

=> d 11 ab

L7 ANSWER 11 OF 38 HCAPLUS COPYRIGHT 2004 ACS on STN
AB The mutants His433Asn and His433Ser were constructed for the Luciola

mingrelica firefly luciferase, which has high homol. with luciferases indicated. The catalytic properties of the enzyme mutant forms and their bioluminescence spectra were studied. Anal. of the data obtained permits the elucidation of the mechanism of the influence of the His-433 residue on the luciferase active site. The comparison of the bioluminescence spectra of the wild type and mutant luciferases demonstrates that the bioluminescence maximum coincides for all three proteins and is equal to 562-564 nm. On the His433Ser mutation, the removal of the His pos. charge and the appearance of the partial neg. charge from Ser lead to destabilization of the cluster, and the neg. side chains of the surrounding residues may slightly move away from each other. In this case, some changes in the configuration of the **ATP** phosphate groups may occur that may be the reason for such a dramatic decrease in the catalytic activity of the His433Ser mutant. Thus, in spite of the fact that the His-433 residue is located rather far from the luciferase active site, its change for Ser results in the noticeable changes in physico-chemical and catalytic properties of the enzyme due to the rather small structural changes in the enzyme-substrate complex.

=> d 21-30

L7 ANSWER 21 OF 38 MEDLINE on STN DUPLICATE 8
AN 1999459270 MEDLINE
DN PubMed ID: 10529195
TI Site-directed **mutagenesis** of **firefly** **luciferase** active site amino acids: a proposed model for bioluminescence color.
AU Branchini B R; Magyar R A; Murtiashaw M H; Anderson S M; Helgerson L C; Zimmer M
CS Department of Chemistry, Connecticut College, New London 06320, USA.. brbra@conncoll.edu
SO Biochemistry, (1999 Oct 5) 38 (40) 13223-30.
Journal code: 0370623. ISSN: 0006-2960.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 199911
ED Entered STN: 20000111
Last Updated on STN: 20000111
Entered Medline: 19991110

L7 ANSWER 22 OF 38 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1999:496889 HCAPLUS
DN 132:75637
TI Measurement of intracellular **ATP** concentrations in vivo in bacterial cells expressing Km **mutants** of **firefly** **luciferase**
AU Squirrell, D. J.; Murphy, M. J.; Price, R. L.; White, P. J.
CS DERA, Salisbury, Wiltshire, SP4 0JQ, UK
SO Bioluminescence and Chemiluminescence: Perspectives for the 21st Century, Proceedings of the International Symposium on Bioluminescence and Chemiluminescence, 10th, Bologna, Sept. 4-8, 1998 (1999), Meeting Date 1998, 177-180. Editor(s): Roda, Aldo. Publisher: Wiley, Chichester, UK.
CODEN: 67YCAD
DT Conference
LA English
RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 23 OF 38 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
DUPLICATE 9
AN 1999-03409 BIOTECHDS

TI Mutant luciferase with increased Km for **ATP**;
Photinus pyralis expression in host cell, used to determine steady state or cellular **ATP** levels
AU Squirrell D J; White P J; Lowe C R; Murray J A
PA Min.Def.U.K.
LO Hampshire, UK.
PI WO 9846729 22 Oct 1998
AI WO 1998-GB1026 7 Apr 1998
PRAI GB 1997-7486 11 Apr 1997
DT Patent
LA English
OS WPI: 1999-080738 [07]

L7 ANSWER 24 OF 38 MEDLINE on STN DUPLICATE 10
AN 1999017884 MEDLINE
DN PubMed ID: 9799491
TI Site-directed **mutagenesis** of histidine 245 in **firefly luciferase**: a proposed model of the active site.
AU Branchini B R; Magyar R A; Murtiashaw M H; Anderson S M; Zimmer M
CS Department of Chemistry, Connecticut College, New London 06320, USA.. brbra@conncoll.edu
SO Biochemistry, (1998 Nov 3) 37 (44) 15311-9.
Journal code: 0370623. ISSN: 0006-2960.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 199811
ED Entered STN: 19990115
Last Updated on STN: 19990115
Entered Medline: 19981130

L7 ANSWER 25 OF 38 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1998:141871 HCAPLUS
TI **Mutational** analysis of a **firefly luciferase** active-site peptide.
AU Anderson, Shannon M.; Branchini, Bruce R.
CS Connecticut College, New London, CT, 06320, USA
SO Book of Abstracts, 215th ACS National Meeting, Dallas, March 29-April 2 (1998), CHED-397 Publisher: American Chemical Society, Washington, D. C.
CODEN: 65QTAA
DT Conference; Meeting Abstract
LA English

L7 ANSWER 26 OF 38 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN DUPLICATE 11
AN 1998:329740 SCISEARCH
GA The Genuine Article (R) Number: ZJ521
TI Bioluminescent enzyme immunoassay using thermostable mutant luciferase and acetate kinase as a labelled enzyme
AU Murakami S; Ito K; Goto T; Kamada S; Maeda M (Reprint)
CS SHOWA UNIV, SCH PHARMACEUT SCI, SHINAGAWA KU, 1-5-8 HATANODAI, TOKYO 158, JAPAN (Reprint); SHOWA UNIV, SCH PHARMACEUT SCI, SHINAGAWA KU, TOKYO 158, JAPAN; KIKKOMAN FOODS INC, DIV RES & DEV, NODA, CHIBA 278, JAPAN; TOSOH CORP, TOKYO RES CTR, AYASE, KANAGAWA 252, JAPAN
CYA JAPAN
SO ANALYTICA CHIMICA ACTA, (31 MAR 1998) Vol. 361, No. 1-2, pp. 19-26.
Publisher: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS.
ISSN: 0003-2670.
DT Article; Journal
FS PHYS
LA English
REC Reference Count: 14
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

L7 ANSWER 27 OF 38 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1997:500354 HCAPLUS
DN 127:216960
TI **Mutation** of protease-sensitive region in **firefly luciferase** alters light emission properties
AU Thompson, John F.; Geoghegan, Kieran F.; Lloyd, David B.; Lanzetti, Anthony J.; Magyar, Rachelle A.; Anderson, Shannon M.; Branchini, Bruce R.
CS Molecular Sciences Dep., Central Res. Div., Pfizer Inc., Groton, CT, 06320, USA
SO Journal of Biological Chemistry (1997), 272(30), 18766-18771
CODEN: JBCHA3; ISSN: 0021-9258
PB American Society for Biochemistry and Molecular Biology
DT Journal
LA English

L7 ANSWER 28 OF 38 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1996:541252 HCAPLUS
DN 125:187591
TI Gene luc site-directed mutation, mutant luciferase recombinant production, and mutant luciferase reduced Km, increased heat stability, and use in luminescence assay
IN Squirrell, David James; Lowe, Christopher Robin; White, Peter John; Murray, James Augustus Henry
PA The Secretary of State for Defence, UK
SO PCT Int. Appl., 40 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9622376	A1	19960725	WO 1996-GB99	19960119
	W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	CA 2210354	AA	19960725	CA 1996-2210354	19960119
	AU 9643973	A1	19960807	AU 1996-43973	19960119
	AU 707243	B2	19990708		
	ZA 9600453	A	19960807	ZA 1996-453	19960119
	GB 2311525	A1	19971001	GB 1997-13482	19960119
	GB 2311525	B2	19981111		
	EP 804587	A1	19971105	EP 1996-900380	19960119
	R: CH, DE, DK, FR, GB, IT, LI, NL				
	JP 10512750	T2	19981208	JP 1996-522119	19960119
	IN 186115	A	20010623	IN 1996-DE122	19960119
	RU 2210594	C2	20030820	RU 1997-113723	19960119
	NO 9703349	A	19970919	NO 1997-3349	19970718
	US 6171808	B1	20010109	US 1997-875277	19971001
PRAI	GB 1995-1172	A	19950120		
	GB 1995-8301	A	19950424		
	WO 1996-GB99	W	19960119		

L7 ANSWER 29 OF 38 LIFESCI COPYRIGHT 2004 CSA on STN
AN 96:95414 LIFESCI
TI Extrachromosomal recombination occurs efficiently in cells defective in various DNA repair systems
AU Morrison, C.; Wagner, E.*
CS Boehringer Ingelheim Vienna, Dr Boehringergasse 5-11, A-1121 Vienna, Austria
SO NUCLEIC ACIDS RES., (1996) vol. 24, no. 11, pp. 2053-2058.
ISSN: 0305-1048.

DT Journal
FS N
LA English
SL English

L7 ANSWER 30 OF 38 MEDLINE on STN DUPLICATE 12
AN 96288054 MEDLINE
DN PubMed ID: 8679773
TI [Physicochemical properties of recombinant **luciferase** from the **firefly Luciola** mingrelica and its **mutant** forms].
Fiziko-khimicheskie svoistva rekombinantnoi liutsiferezy svetliakov Luciola mingrelica i ee mutantnykh form.
AU Dement'eva E I; Zheleznova E E; Kutuzova G D; Lundovskikh I A; Ugarova N N
CS Faculty of Chemistry, M.V. Lomonosov Moscow State University.
SO Biokhimiia (Moscow, Russia), (1996 Jan) 61 (1) 152-9.
Journal code: 0372667. ISSN: 0320-9725.
CY RUSSIA: Russian Federation
DT Journal; Article; (JOURNAL ARTICLE)
LA Russian
FS Priority Journals
EM 199608
ED Entered STN: 19960828
Last Updated on STN: 19980206
Entered Medline: 19960816

=> d 27, 30 ab

L7 ANSWER 27 OF 38 HCAPLUS COPYRIGHT 2004 ACS on STN
AB Firefly (Photinus pyralis) luciferase (EC 1.13.12.7) is widely used as a reporter enzyme in cell biol. One of its distinctive properties is a pronounced susceptibility to proteolytic degradation that causes luciferase to have a very short intracellular half-life. To define the structural basis for this behavior and possibly facilitate the design of more stable forms of luciferase, limited proteolysis studies were undertaken using trypsin and chymotrypsin to identify regions of the protein whose accessible and flexible character rendered them especially sensitive to cleavage. Regions of amino acid sequence 206-220 and 329-341 were found to be sensitive, and because the region around 206-220 had high homol. with other luciferases, CoA ligases, and peptidyl synthetases, this region was selected for mutagenesis expts. intended to determine which of its amino acids were essential for activity. Surprisingly, many highly conserved residues including Ser-198, Ser-201, Thr-202, and Gly-203 could be mutated with little effect on the luminescent activity of P. pyralis luciferase. One mutation, however, S198T, caused several alterations in enzymic properties including shifting the pH optimum from 8.1 to 8.7, lowering the Km for Mg-**ATP** by a factor of 4, and increasing the half-time for light emission decay by a factor of up to 150. Whereas S198T-luciferase was less active than the wild-type enzyme, activity could be restored by the introduction of addnl. L194F and N197Y mutations. In addition to indicating the involvement of this region in **ATP** binding, these results provide a new form of the enzyme that affords a more versatile reporter system.

L7 ANSWER 30 OF 38 MEDLINE on STN DUPLICATE 12
AB Physico-chemical properties of the recombinant L. mingrelica luciferase synthesized by E. coli cells have been studied. The catalytic and spectral properties of recombinant luciferase were similar to those of the native enzyme but the former was less stable in the presence of the additional Cys residue. The **mutant** forms of L. mingrelica **firefly luciferase** with point **mutations** Cys-82-->Ala, Cys-260-->Ala, Cys-393-->Ala and Thr-204-->Asp, have been constructed using the method of site-specific mutagenesis. Mutations

Cys-82,260,393-->Ala changed slightly the Km values for **ATP** and luciferin but did not influence kcat. The Cys-393-->Ala mutant appeared to be more stable in comparison with the native enzyme. Mutation Thr-204-->Asp resulted in a 8-fold increase in the **ATP** binding constant and in a 2-fold increase in the kcat, thus indicating that Thr-204 may be located in the **ATP**-binding region of luciferase. Dithiothreitol, ethylene glycol, bovine serum albumin and trehalose had a stabilizing effect on the native, recombinant and mutant luciferases.

=> d 31-38

L7 ANSWER 31 OF 38 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN DUPLICATE 13
AN 96:475322 SCISEARCH
GA The Genuine Article (R) Number: UR714
TI PHYSICOCHEMICAL PROPERTIES OF RECOMBINANT **LUCIOLA**-MINGRELICA-**LUCIFERASE** AND ITS **MUTANT** FORMS
AU DEMENTIEVA E I (Reprint); ZHELEZNOVA E E; KUTUZOVA G D; LUNDOVSKIKH I A; UGAROVA N N
CS MOSCOW MV LOMONOSOV STATE UNIV, SCH CHEM, MOSCOW 000958, RUSSIA (Reprint)
CYA RUSSIA
SO BIOCHEMISTRY-MOSCOW, (JAN 1996) Vol. 61, No. 1, pp. 115-119.
ISSN: 0006-2979.
DT Article; Journal
FS LIFE
LA ENGLISH
REC Reference Count: 23
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

L7 ANSWER 32 OF 38 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN DUPLICATE 14
AN 95:731363 SCISEARCH
GA The Genuine Article (R) Number: RZ915
TI ENZYMATIC-PROPERTIES OF **MUTANT** THERMOSTABLE **FIREFLY LUCIFERASE** AND ITS APPLICATION TO MEASUREMENT OF ADENOSINE-TRIPHOSPHATE AND ACETATE KINASE
AU MURAKAMI S (Reprint); MAEDA M; TSUJI A
CS KIKKOMAN FOODS INC, DIV RES & DEV, 399 NODA, NODA, CHIBA 278, JAPAN (Reprint); SHOWA UNIV, SCH PHARMACEUT SCI, SHINAGAWA KU, TOKYO 142, JAPAN
CYA JAPAN
SO BUNSEKI KAGAKU, (OCT 1995) Vol. 44, No. 10, pp. 845-851.
ISSN: 0525-1931.
DT Article; Journal
FS PHYS
LA Japanese
REC Reference Count: 11
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

L7 ANSWER 33 OF 38 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
AN 94:413524 SCISEARCH
GA The Genuine Article (R) Number: NU980
TI ENHANCEMENT OF THERMOSTABILITY OF FIREFLY LUCIFERASE FROM LUCIOLA-LATERALIS BY A SINGLE AMINO-ACID SUBSTITUTION
AU KAJIYAMA N (Reprint); NAKANO E
CS KIKKOMAN FOODS INC, DIV RES & DEV, 399 NODA, NODA, CHIBA 278, JAPAN (Reprint)
CYA JAPAN
SO BIOSCIENCE BIOTECHNOLOGY AND BIOCHEMISTRY, (JUN 1994) Vol. 58, No. 6, pp. 1170-1171.
ISSN: 0916-8451.
DT Note; Journal
FS LIFE; AGRI
LA ENGLISH
REC Reference Count: 10
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

L7 ANSWER 34 OF 38 LIFESCI COPYRIGHT 2004 CSA on STN DUPLICATE 15
AN 93:124804 LIFESCI
TI Bioluminescence detection system of **mutagen** using **firefly luciferase** genes introduced in Escherichia coli lysogenic strain.
AU Lee, S.M.; Suzuki, M.; Kumagai, M.; Ikeda, H.; Tamiya, E.; Karube, I.
CS Res. Cent. Adv. Sci. and Technol., Univ. Tokyo, 4-6-1 Komaba, Meguro-ku, Tokyo, 153, Japan
SO ANAL. CHEM., (1992) vol. 64, no. 17, pp. 1755-1759.
ISSN: 0003-2700.
DT Journal
FS J; G
LA English
SL English

L7 ANSWER 35 OF 38 LIFESCI COPYRIGHT 2004 CSA on STN
AN 93:112169 LIFESCI
TI Engineering firefly luciferase as an indicator of cyclic AMP-dependent protein kinase in living cells.
AU Sala-Newby, G.; Campbell, A.K.
CS Dep. Med. Biochem., Univ. Wales Coll. Med., Heath Park, Cardiff CF4 4XN, UK
SO FEBS LETT., (1992) vol. 307, no. 2, pp. 241-244.
ISSN: 0014-5793.
DT Journal
FS L
LA English
SL English

L7 ANSWER 36 OF 38 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN DUPLICATE 16
AN 1991-15060 BIOTECHDS
TI New mutant luciferase polypeptide or enzyme;
firefly gene cloning and expression in Escherichia coli; use in **ATP** analysis; DNA sequence
PA Kikkoman
PI EP 449621 2 Oct 1991
AI EP 1991-302717 27 Mar 1991
PRAI JP 1990-294258 30 Oct 1990; JP 1990-75696 27 Mar 1990
DT Patent
LA English
OS WPI: 1991-290027 [40]

L7 ANSWER 37 OF 38 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
AN 1991-11942 BIOTECHDS
TI Isolation and characterization of **mutants** of **firefly luciferase** which produce different colors of light;
enzyme engineering; single amino acid substitution results in green, red, yellow-orange, orange light-producing enzyme; potential application **ATP** detection using luminescence
AU Kajiyama N; Nakano E
CS Kikkoman
LO Research and Development Division, Kikkoman Corporation, 399 Noda, Noda-City, Chiba 278, Japan.
SO Protein Eng.; (1991) 4, 6, 691-93
CODEN: PRENE9
DT Journal
LA English

L7 ANSWER 38 OF 38 EMBASE COPYRIGHT 2004 ELSEVIER INC. ALL RIGHTS RESERVED. on STN DUPLICATE 17
AN 85195382 EMBASE
DN 1985195382

TI Determination of picomole amounts of glycerate 3-phosphate, glycerate 2-phosphate, and phosphoenol pyruvate by an enzymatic assay coupled to firefly luciferase/luciferin luminescence.
AU Lilly McC. R.; Grahame P.K.; Ali S.R.M.
CS Department of Biology, University of Wollongong, Wollongong, NSW 2500, Australia
SO Analytical Biochemistry, (1985) 148/2 (282-287).
CODEN: ANBCA2
CY United States
DT Journal
FS 029 Clinical Biochemistry
LA English

=> d 31-38 ab

L7 ANSWER 31 OF 38 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN DUPLICATE 13
AB Physicochemical properties of recombinant L. mingrelica luciferase synthesized by E. coli cells were studied. The catalytic and spectral properties of the recombinant luciferase were similar to those of the native one, but the former was less stable due to the presence of an additional Cys residue. **Mutant** forms of L. mingrelica **firefly luciferase** with point **mutations** Cys-82-->Ala, Cys-260-->Ala, Cys-393-->Ala, and Thr-204-->Asp were constructed using the method of site-specific mutagenesis. Cys-82,260,393-->Ala mutations changed slightly the K-m for **ATP** and luciferin but did not influence k(cat). The Cys-393-->Ala mutant appeared to be more stable than the native luciferase. Mutation Thr-204-->Asp resulted in a 8-fold increase in the **ATP** binding constant and a 2-fold increase in k(cat), indicating that Thr-204 may be located in the **ATP**-binding region of the luciferase. Dithiothreitol, ethylene glycol, bovine serum albumin, and trehalose had a stabilizing effect on the native, recombinant, and mutant luciferases.

L7 ANSWER 32 OF 38 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN DUPLICATE 14
AB We have purified thermostable **mutant firefly luciferases** obtained by random and site specific **mutagenesis** from **Luciola** cruciata and Luciola lateralis in which the amin acid residue at position 217 was changed from Thr to Ile or Leu, and Ala to Leu, respectively. Optimal pH and K-m values of three **mutant firefly luciferases** were found to be similar to those of wild type luciferase. But mutant luciferases were superior to wild type luciferase in thermal and pH stability. In these mutant, Ala217Leu mutant luciferase was most stable with 50% of the activity remaining after heating at 50 degrees C for 20 min. Because of its high productivity, we applied Thr217Ile mutant luciferase to the bioluminescent assay of adenosine triphosphate (**ATP**) and acetate kinase (AK). The bioluminescent assay for **ATP** ranged from 2.0 X 10(-14) M to 2.0 X 10(-10) M. The bioluminescent assay of AK was done by firefly-luciferase, measuring **ATP** produced by the enzymatic reaction of AK using acetyl phosphate and ADP as substrate. The detection limit of AK was 8.6 zmol/assay (5200 molecules) and the relative standard deviation (RSD, n=6) for each point ranged from 1.5 to 5.6%. Thus thermostable mutant luciferase is useful for bioluminescent determination of **ATP**, and especially for detection of **ATP** producing enzyme activity.

L7 ANSWER 33 OF 38 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
AB We constructed **firefly luciferase mutants** from **Luciola** lateralis in which Ala at position 217 was replaced by each of three hydrophobic amino acid residues (Ile, Leu, and Val). These mutants were superior to the wild-type in thermostability. Especially, the purified Ala217Leu mutant still maintained over 70% of the initial activity after 60 min at 50 degrees C. This **mutant** is

the most thermostable **firefly luciferase** obtained.

L7 ANSWER 34 OF 38 LIFESCI COPYRIGHT 2004 CSA on STN DUPLICATE 15
AB A rapid and convenient microbial sensing system for mutagens was developed based upon the induction of prophage from Escherichia coli lysogenic strain and bioluminescence. The system consisted of lysogenic E. coli encoding firefly luciferase genes and a photodetection system. Measurement of mutagen mitomycin C was achieved by measuring the luminescence intensity emitted from E. coli lysogenic strain for the recombinant phage in the presence of luminescence substrates. Approximately 1 h after addition of mitomycin C, the luminescence began to be observed, and 3 h after, it attained a level of 2 times greater than that of 1 h. Irradiation with ultraviolet light also produced light based on induction of phage from the E. coli lysogenic strain for the recombinant phage. When nonmutagenic toxic compounds like sodium azide were added to the reaction medium, luminescence was not observed. Mitomycin C could be detected within 1 h with this sensing system, at concentrations down to 10 super(2) ng/assay.

L7 ANSWER 35 OF 38 LIFESCI COPYRIGHT 2004 CSA on STN
AB A bioluminescent indicator for protein kinase A has been developed by **mutating** V217 in **firefly** (Photinus pyralis) **luciferase** to R, and the C-terminal peroxisomal signal removed by PCR. The cDNA for normal and the RRFS mutant luciferase were inserted into pSV7d and expressed in COS-7 cells. The cyclic-AMP analogue, 8-(4-chlorophenylthio)-cyclic AMP caused a 5-10% decrease in light emission within 4 min in COS cells expressing the RRFS mutant, but not in cells expressing normal luciferase. This provides for the first time an indicator for detecting and quantifying protein kinase A activation in living cells.

L7 ANSWER 36 OF 38 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
AB A new **mutant firefly luciferase** (EC-1.13.12.7) contains the following amino acid replacements: Val-233 by Ile; Val-239 by Ile; Ser-286 by Asn; Gly-326 by Ser; His-433 by Tyr; and/or Pro-452 by Ser. The following are also new: a mutant luciferase gene encoding the enzyme; recombinant DNA containing the gene; a method for producing recombinant mutant luciferase by culture of recombinant Escherichia coli FERM BP-2825, FERM BP-2826, FERM BP-3135, FERM BP-3136, FERM BP-3137 or FERM BP-3138; in vitro **mutagenesis** of a wild-type **firefly luciferase** gene using a chemical **mutagen**; and an **ATP** assay kit containing the luciferase mutant and luciferin, to measure the amount of **ATP** in colored solutions by production of red, orange or green light, at a different wavelength from that produced by native luciferase (609 and 612 nm, 595 and 607 nm, or 558 nm, respectively). The wild-type luciferase gene may be isolated from e.g. Luciola cruciata, Luciola lateralis, Photinus pyralis, etc. The new luciferase is industrially useful, and may be used to measure **ATP** in e.g. blood, where native luciferase does not provide reliable results. (20pp)

L7 ANSWER 37 OF 38 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
AB Plasmid pGLf37 containing luciferase (EC-1.13.12.7) cDNA from the 'Genji' firefly, Luciola cruciata was treated with 0.8 M hydroxylamine, 0.1 M sodium phosphate and 1 mM EDTA, pH 6.0, for 2 hr at 65 deg. The mutagen-treated plasmid was used to transform Escherichia coli JM101. E. coli JM101 cells harboring the mutant plasmid were cultivated, lyzed and lysates were fractionated, precipitated and subjected to gel filtration on an Ultrogel AcA34 column. Some of the isolated mutant enzymes produced different colors of light, ranging from green to red. 5 Such mutants, producing green (lambda max = 558 nm), yellow-orange (lambda max = 595 nm), orange (lambda max = 607 nm) and red light (lambda max = 609 and 612 nm), were analyzed. The mutations were single amino acid changes, from Val-239 to Ile, Pro-452 to Ser, Ser-286 to Asn, Gly-326 to

Ser and His-433 to Tyr, respectively. These mutant enzymes could be used more effectively for determining the amount of **ATP** in colored samples. In the case of red-colored samples, determination was twice as sensitive using the mutant enzyme producing red light than with wild-type luciferase. (15 ref)

L7 ANSWER 38 OF 38 EMBASE COPYRIGHT 2004 ELSEVIER INC. ALL RIGHTS RESERVED. on STN DUPLICATE 17

AB A procedure for the determination of picomole amounts of glycerate 3-phosphate, glycerate 2-phosphate, and phosphoenol pyruvate is described. These metabolites were utilized by the glycolytic enzymes phosphoglycerate mutase, enolase, and pyruvate kinase to generate **ATP** which was determined by **firefly luciferase**/luciferin luminescence. The phosphoglycerate **mutase** used was of the glycerate 2,3-bisphosphate-independent type and was prepared from wheat germ. Stoichiometric conversion of glycerate 3-P, ranging in amount from 9 to 275 pmol, occurred after 25 min preincubation and required a narrow range of added mutase. The application of the procedure for determining these metabolites in suspensions of plant protoplasts is described.

```
=> dis his

     (FILE 'HOME' ENTERED AT 18:56:20 ON 20 JUL 2004)

     FILE 'MEDLINE, SCISEARCH, LIFESCI, BIOTECHDS, BIOSIS, EMBASE, HCAPLUS,
     NTIS, ESBIOBASE, BIOTECHNO, WPIDS' ENTERED AT 18:56:36 ON 20 JUL 2004
L1        11631 S LUCIFERASE (10A) (FIREFLY OR LUCIOLA)
L2          356 S L1 (5A)(MUTA? OR VARIANT)
L3          128 DUP REM L2 (228 DUPLICATES REMOVED)
L4            1 S L2 AND 490
L5           94 S L2 AND ATP
L6           93 S L5 NOT L4
L7           38 DUP REM L6 (55 DUPLICATES REMOVED)

=> log h
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                      ENTRY      SESSION
FULL ESTIMATED COST                                  106.38       106.59

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)          SINCE FILE      TOTAL
                                                      ENTRY      SESSION
CA SUBSCRIBER PRICE                                   -1.47        -1.47

 SESSION WILL BE HELD FOR 60 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 19:10:36 ON 20 JUL 2004
```

WEST Search History

Hide Items | Restore | Clear | Cancel

DATE: Tuesday, July 20, 2004

Hide?	Set Name	Query	Hit Count
		DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI; PLUR=YES; OP=ADJ	
☐	L5	L4 not l2	26
☐	L4	L1 and 490	28
☐	L3	L1 with 490	0
☐	L2	L1 and heike	6
☐	L1	luciferase with firefly with (muta$ or variant)	114

END OF SEARCH HISTORY

h e b b cg b chh e g c f c e e b

Hit List

Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Search Results - Record(s) 1 through 6 of 6 returned.

☐ 1. Document ID: US 6171808 B1

Using default format because multiple data bases are involved.

L2: Entry 1 of 6 File: USPT Jan 9, 2001

US-PAT-NO: 6171808
DOCUMENT-IDENTIFIER: US 6171808 B1

TITLE: Mutant luciferases

DATE-ISSUED: January 9, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Squirrell; David J	Salisbury			GB
Lowe; Christopher R	Cambridge			GB
White; Peter J	Cambridge			GB
Murray; James A H	Cambridge			GB

US-CL-CURRENT: 435/8; 435/189, 435/252.3, 435/252.33, 435/254.21, 435/320.1, 536/23.2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWMC | Draw De

☐ 2. Document ID: US 6132983 A

L2: Entry 2 of 6 File: USPT Oct 17, 2000

US-PAT-NO: 6132983
DOCUMENT-IDENTIFIER: US 6132983 A

TITLE: Luciferases

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWMC | Draw De

☐ 3. Document ID: US 6074859 A

L2: Entry 3 of 6 File: USPT Jun 13, 2000

US-PAT-NO: 6074859
DOCUMENT-IDENTIFIER: US 6074859 A

h e b b g e e e f e g c ef b e

TITLE: Mutant-type bioluminescent protein, and process for producing the mutant-type bioluminescent protein

4. Document ID: US 5843746 A

L2: Entry 4 of 6 File: USPT Dec 1, 1998

US-PAT-NO: 5843746
DOCUMENT-IDENTIFIER: US 5843746 A

TITLE: Biotinated firefly luciferase, a gene for biotinated firefly luciferase, a recombinant DNA, a process for producing biotinated luciferase and a bioluminescent analysis method

5. Document ID: US 5814465 A

L2: Entry 5 of 6 File: USPT Sep 29, 1998

US-PAT-NO: 5814465
DOCUMENT-IDENTIFIER: US 5814465 A

TITLE: Biotinated firefly luciferase, a gene for biotinated firefly luciferase, a recombinant DNA, a process for producing biotinated luciferase and a bioluminescent analysis method

6. Document ID: US 5229285 A

L2: Entry 6 of 6 File: USPT Jul 20, 1993

US-PAT-NO: 5229285
DOCUMENT-IDENTIFIER: US 5229285 A

TITLE: Thermostable luciferase of firefly, thermostable luciferase gene of firefly, novel recombinant DNA, and process for the preparation of thermostable luciferase of firefly

Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Terms	Documents
L1 and heike	6

h e b b g e e e f e g c ef b e

Display Format: - Change Format

Previous Page Next Page Go to Doc#

h e b b g e e e f e g c ef b e

NO:10, the luciferase of *Luciola cruciata* of SEQ ID NO:12, the luciferase of *Luciola lateralis* of SEQ ID NO:14, and the luciferase of *Luciola mingrelica* of SEQ ID NO:16.

6. An isolated DNA molecule according to claim **2** wherein, for the encoded amino acid sequence, the corresponding wild-type luciferase is selected from the group consisting of LucPplGR of SEQ ID NO:2, LucPplYG of SEQ ID NO:4, LucPplYE of SEQ ID NO:6, LucPplOR of SEQ ID NO:8, the luciferase of *Photinus pyralis* of SEQ ID NO:10, the luciferase of *Luciola cruciata* of SEQ ID NO:12, the luciferase of *Luciola lateralis* of SEQ ID NO:14, and the luciferase of *Luciola mingrelica* of SEQ ID NO:16.

7. An isolated DNA molecule according to claim **3** wherein, for the encoded amino acid sequence, the corresponding wild-type luciferase is selected from the group consisting of LucPplGR of SEQ ID NO:2, LucPplYG of SEQ ID NO:4, LucPplYE of SEQ ID NO:6, LucPplOR of SEQ ID NO:8, the luciferase of *Photinus pyralis* of SEQ ID NO:10, the luciferase of *Luciola cruciata* of SEQ ID NO:12, the luciferase of *Luciola lateralis* of SEQ ID NO:14, and the luciferase of *Luciola mingrelica* of SEQ ID NO:16.

8. An isolated DNA molecule according to claim **4** wherein, for the encoded amino acid sequence, the corresponding wild-type luciferase is selected from the group consisting of LucPplGR of SEQ ID NO:2, LucPplYG of SEQ ID NO:4, LucPplYE of SEQ ID NO:6, LucPplOR of SEQ ID NO:8, the luciferase of Photinus pyralis of SEQ ID NO:10, the luciferase of *Luciola cruciata* of SEQ ID NO:12, the luciferase of *Luciola lateralis* of SEQ ID NO:14, and the luciferase of Luciola mingrelica of SEQ ID NO:16.

9. An isolated DNA molecule according to claim **5** wherein, for the encoded amino acid sequence, the corresponding wild-type luciferase is selected from the group consisting of LucPplGR of SEQ ID NO:2, LucPplYG of SEQ ID NO:4, LucPplYE of SEQ ID NO:6, and LucPplOR of SEQ ID NO:8.

10. An isolated DNA molecule according to claim **6** wherein, for the encoded amino acid sequence, the corresponding wild-type luciferase is selected from the group consisting of LucPplGR of SEQ ID NO:2, LucPplYG of SEQ ID NO:4, LucPplYE of SEQ ID NO:6, LucPplOR of SEQ ID NO:8.

11. An isolated DNA molecule according to claim **7** wherein, for the encoded amino acid sequence, the corresponding wild-type luciferase is selected from the group consisting of LucPplGR of SEQ ID NO:2, LucPplYG of SEQ ID NO:4, LucPplYE of SEQ ID NO:6, and LucPplOR of SEQ ID NO:8.

12. An isolated DNA molecule according to claim **8** wherein, for the encoded amino acid sequence, the corresponding wild-type luciferase is selected from the group consisting of LucPplGR of SEQ ID NO:2, LucPplYG of SEQ ID NO:4, LucPplYE of SEQ ID NO:6, LucPplOR of SEQ ID NO:8.

13. An isolated DNA molecule according to claim **9** wherein, for the encoded amino acid sequence, the corresponding wild-type luciferase is LucPplGR of SEQ ID NO:2.

14. An isolated DNA molecule according to claim **10** wherein, for the encoded amino acid sequence, the corresponding wild-type luciferase is LucPplGR of SEQ ID NO:2.

15. An isolated DNA molecule according to claim **11** wherein, for the encoded amino acid sequence, the corresponding wild-type luciferase is LucPplGR of SEQ ID NO:2.

16. An isolated DNA molecule according to claim **12** wherein, for the encoded amino acid sequence, the corresponding wild-type luciferase is LucPplGR of SEQ ID NO:2.

17. An isolated DNA molecule according to claim **13** wherein the encoded synthetic mutant luciferase is selected from the group consisting of LucPplGR -R_{215}H, -R_{215}G, -R_{215}T, -R_{215}M, -R_{215}P, -R_{215}A, -R_{215}L, -V_{224}I, -V_{224}S, -V_{224}F, -V_{224}Y, -V_{224}L, -V_{224}H, -V_{224}G, -V_{232}E, -V_{236}H, -V_{236}W, -Y_{237}S, -Y_{237}C, -H_{242}A, -F_{244}L, -G_{245}S, -G_{245}E, -I_{248}R, -I_{248}V, -I_{248}F, -I_{248}T, -S_{247}F/I_{248}T, -V_{224}F/R_{215}G, -V_{224}F/R_{215}T, -V_{224}F/R_{215}V, -V_{227},F/R_{215}P, -V_{224}F/P_{222}S, -V_{224}F/Q_{227}E, -V_{224}F/L_{238}V, -V_{224}F/L_{238}T, -V_{224},F/S_{247}G -V_{224}F/S_{247}H, -V_{224}F/S_{247}T, and -V_{224}F/S_{247}F.

18. An isolated DNA molecule according to claim **1**, wherein the position of the amino acid substitution corresponds to position 215 in the amino acid sequence of LucPplGR of SEQ ID NO:2.

19. An isolated DNA molecule according to claim **1**, wherein the position of the amino acid substitution corresponds to position 224 in the amino acid sequence of LucPplGR of SEQ ID NO:2.

20. An isolated DNA molecule according to claim **1**, wherein the position of the amino acid substitution corresponds to position 232 in the amino acid sequence of LucPplGR of SEQ ID NO:2.

21. An isolated DNA molecule according to claim **1**, wherein the position of the amino acid substitution corresponds to position 236 in the amino acid sequence of LucPplGR of SEQ ID NO:2.

22. An isolated DNA molecule according to claim **1**, wherein the position of the amino acid substitution corresponds to position 237 in the amino acid sequence of LucPplGR of SEQ ID NO:2.

23. An isolated DNA molecule according to claim **1**, wherein the position of the amino acid substitution corresponds to position 242 in the amino acid sequence of LucPplGR of SEQ ID NO:2.

24. An isolated DNA molecule according to claim **1**, wherein the position of the amino acid substitution corresponds to position 244 in the amino acid sequence of LucPplGR of SEQ ID NO:2.

25. An isolated DNA molecule according to claim **1**, wherein the position of the amino acid substitution corresponds to position 245 in the amino acid sequence of LucPplGR of SEQ ID NO:2.

26. An isolated DNA molecule according to claim **1**, wherein the position of the amino acid substitution corresponds to position 248 in the amino acid sequence of LucPplGR of SEQ ID NO:2.

27. An isolated DNA molecule comprising a segment having a sequence which encodes a synthetic mutant beetle luciferase having an amino acid sequence that differs from that of the corresponding wild-type luciferase by at least one amino acid substitution, the position of the amino acid substitution corresponding to position 282 in the amino acid sequence of LucPplGR of SEQ ID NO:2, wherein the mutant luciferase produces bioluminescence having a shift in wavelength of peak intensity of at least 1 nanometer relative to the bioluminescence produced by the wild-type luciferase.

28. An isolated DNA molecule comprising a segment having a sequence which encodes a synthetic mutant beetle luciferase having an amino acid sequence that differs from that of the corresponding wild-type luciferase by at least one amino acid substitution, the position of the amino acid substitution corresponding to position 283 in the amino acid sequence of LucPplGR of SEQ ID NO:2, wherein the mutant luciferase produces bioluminescence having a shift in wavelength of peak intensity of at least 1 nanometer relative to the bioluminescence produced by the wild-type luciferase.